

THEOLOGICAL MODELING AND EXPERIMENTAL THEOLOGY: A CALL FOR THEOLOGICAL RESPONSIBILITY

by James B. Miller

Perhaps one of the most serious consequences of the conflict between science and theology from the trial of Galileo in 1633 to the Scopes "monkey trial" in 1925 has been the separation of the scientific and theological disciplines. As P. H. McDonald has written in "Cybernetics and Theology," many theologians have retreated into "the splendid isolation of intellectual monkery" while their scientific brethren "flushed with the acquisition and display of a little knowledge . . . have now come hard upon the hidden rocks of origin, destiny and purpose in a scientifically expanded universe."¹

This apparent separation of the "two cultures" is of increasing discomfort for those growing numbers of persons who live and work between the disciplines of the humanities and those of the sciences. For men and women such as these, this disciplinary division is no mere intellectual inconvenience. It is rather the source of a critical vocational ambiguity.

In my own case, I am an ordained Presbyterian minister, presently engaged in educational research and development within an engineering department in a state university. In order to escape vocational schizophrenia it has been necessary to attempt to reach some personally adequate reconciliation between my "two cultures." The past two and a half years can mark only the barest beginning of the task. Still, certain general conclusions are beginning to take shape. It is these which will be the substance of this article.

It will be my contention that not only is this separation between science and theology a false one, resting upon an improper distinction between objective and subjective ways of knowing, but that, in addition, the perception of the theologian in his own discipline is dependent upon his incorporation of the work in the other discipline. In order to illustrate these assertions I will point first to the subjective, nonrational bases of the sciences, then to the common

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modeling process found both in the sciences and in theology, and finally to the possibility of a theology which develops from a methodological synthesis with science.

SUBJECTIVITY IN SCIENTIFIC MODELING

The claim of scientific objectivity, so often espoused both by those within and those without the scientific disciplines, is a very deceptive one. For all of the sciences have at their very roots nonrational, subjective premises and assumptions. The process of scientific progress is not the application of a set of inductive rules upon a collection of experimental data, but is rather, as Michael Polanyi describes it, a method of guesswork. He writes that the propositions of a science "are founded on the assumptions of science concerning the structure of the universe and on the evidence of observations collected by the methods of science."² These assumptions concerning the structure of the universe are what Stephen Toulmin has called "ideals of natural order." Their influence is felt before nature is interrogated in the laboratory. "For, though Nature must of course be left to answer to our interrogations for herself, it is always *we* who frame the questions. And the questions we ask inevitably depend on prior theoretical considerations."³

As an example, in the era prior to the rise of Newtonian mechanics and historical geology it was the biblical model which supported all theoretical considerations regarding the natural history of the earth. Changes in topology were seen as the result of the dramatic interplay of divine forces using the world as a stage. Thus, boulders scattered across the face of Europe were regarded as the debris of the Noachian Flood. With the discovery of the speed of light, however, the great age of the universe became evident. And with the discovery of time, it was possible for men to hear what Loren Eiseley has called "the roar of the invisible Niagara falling into the rain barrel outside their window."⁴ Given these new perceptions, it was only a matter of time before the slow but sure processes of geological decay and renewal were recognized.

It is important to emphasize again that this change in perspective was not the result of the application of a set of inductive rules upon a particular set of data, nor was it the result of a simple interpretation of empirical observations. The rise of this new paradigm occurred as the consequence of intuitive "leaps of faith," in response to observations but in no way logically necessitated by them. As Thomas Kuhn has written, "No ordinary sense of the term 'interpretation' fits [the] flashes of intuition through which a new

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paradigm is born."⁵ Thus, the ascription of objectivity to the scientific enterprise, implying that it is a method of inquiry which excludes a priori judgments, is not simply misleading but false. It is clear that the sciences depend upon one or more nonrational, intuitive preconceptions which define the methods, problem fields, and standards of solution in each particular science.

REALITY TESTING OF THEOLOGICAL MODELS

However, the presence of nonrational preconceptions in the sciences neither invalidates the rational theoretical structures built upon them nor does it suggest that such structures are unnecessary. Toulmin emphasizes the essential character of these theoretical constructs when he writes that "the mainspring of science is the conviction that by honest, imaginative inquiry we can build a system of ideas about Nature which has some legitimate claim to 'reality.'"⁶ These theoretical systems, often referred to as models, are perhaps the primary output of the scientific endeavor. Their main purpose is not so much to predict future occurrences, though often they can serve this end; rather these models are initially concerned with making experience intelligible.

This activity of model building is closely related to the symbolic way in which man perceives reality. As Robert Bellah has said, "Reality is inner as well as outer and . . . the symbol is not decoration but our way of apprehending the real."⁷ The ordering of these symbols into conceptual systems is required, then, not simply for the task of reporting experience; for in Herbert Fingarette's words, "Concepts do not only 'reflect' and report our experience; as meanings, not merely as verbalistic structures, they are constitutive of experience."⁸ It is not that we perceive the world around us in some pure form and then for the sake of convenience categorize our perceptions symbolically. It is rather that the world is perceived only as interpreted by our own particular set of symbols.

This might be seen in many examples within the sciences, but one from the history of mechanics will be helpful. The concept of the pendulum developed by Galileo dealt with the "same" sensory data that was available to Aristotle. However, because Aristotle had no symbol for "ideal" or frictionless motion he was incapable of seeing a pendulum at all. Through his eyes this same phenomena was a rock on a string seeking its "natural" position of rest.⁹ It is not, then, that we somehow decide to model our experience in symbolic or con-

ceptual form, but rather that our experience is mediated meaningfully to us only through symbols and concepts.

The progress of science in the past three hundred years demonstrates the power to understand inherent in a critical and disciplined refinement of these "natural" symbols. However, this same period of history well illustrates a principle of partiality or incompleteness which has been affirmed in Western culture at least as long as has the second commandment of the Decalogue.

Accompanying this necessity for modeling is the temptation to view particular models and concepts as complete explanatory systems which totally encapsulate the meaning of the reality behind experience. From a theological perspective Reinhold Niebuhr well categorized this temptation when he wrote that "man is tempted to deny the limited character of his knowledge, and the finiteness of his perspectives. He pretends to have achieved a degree of knowledge which is beyond the limit of finite mind."¹⁰ The continuing revolutions in science demonstrate both the limitedness of particular scientific models as well as man's tendency to absolutize his models. (The church has also been involved in this error as is witnessed by the aforementioned trials of Galileo and Thomas Scopes.) Still, with the discovery of every new paradigm the open-endedness of human knowledge is reaffirmed, and even in so erudite a field as mathematics the limited character of particular mathematical systems has been demonstrated in the work of Kurt Gödel. For Gödel has shown that for any axiomatic system there are statements within the system, known to be true, which are nevertheless inexplicable in terms of the system. All of this goes to suggest that the process of science itself is witness to an affirmation of the transcendence of reality implicit within the scientific disciplines.

Is this to say, then, that rational modeling is insignificant because it cannot supply us with a systematic understanding of all that is? Certainly not! For though all human knowledge may be partial, the effective power of even that incomplete knowledge has proved to be great, as can be seen in the sweeping technological innovations of the present day. The alliance between mathematics and experimentation, creating ever more adequate models, has made it possible for man not only to destroy his world but to create a new one.

To this point the discussion of modeling has focused largely upon the arena of the sciences; however, contrary to some views, the scriptural tradition and the history of doctrine both manifest the modeling activity and the revolution of models. Here again are

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found the construction of rational explanatory concepts on nonrational bases which are then challenged by the events of history and are finally transmuted into new paradigms. A good example of this process is the shift from the Davidic Covenant to the Messianic Hope in the light of the Babylonian captivity.

The whole history of covenant in Israel points to the revolution of concepts, but the historical and theological crisis caused by the fall of the Davidic line and the Babylonian captivity is particularly revealing. The formation of the nation under the monarchy of David and its political and economic growth through the monarchy of Solomon seemed a clear witness to the presence of the favor of God with David's house. This sense of divine grace was articulated in the form of an unconditional covenant between Yahweh and the House of David, that the monarchical line would rule in the land *forever* (2 Sam. 7:1 f.). The history of the nation, however, took a different turn. First the nation divided, north and south; then the northern kingdom was inundated by the Assyrians; and finally the southern kingdom, the seat of the Davidic monarchy, was overrun by the Babylonians and large portions of the population sent into exile. In the face of this historical reality, the official theology of the nation, centered upon the unconditional covenant with David, was severely inadequate. Thus, it gave way to a historical projection of the covenant first in messianic and later in apocalyptic terms. Confronted with a historical reality which was inexplicable in terms of the earlier theological model, a new model was derived to encompass both the perception of the past and that of the present.

But if, as has been suggested, scientific models and theological models are achieved through functionally similar activities, what is the difference which separates scientific method and theological method?

SOME COMPARISONS OF METHOD

At this juncture I would argue that although methodologically both science and theology implicitly manifest the same process of model validation (i.e., a testing of models in the arena of ongoing history), their apparent difference stems from the explicit stances they each take regarding this process. Within theological ranks the process has been denied in favor of two alternate views: the traditional-interpretive and the pragmatic-ethical.

The first of these positions understands the validation of theological models to lie in the past, in a set of revealed truth which is the

final court of appeal. Theological activity, then, consists essentially of the use of contemporary language to express ancient ideas. The fallacy in this position is that it is forced to deny the very process of theological development which is evident both in scripture and in the history of doctrine. There is hardly one concept, if any, in Christian theology which can be traced unchanged back to the earliest portions of the Old Testament tradition. And certainly the theological struggles of the early church councils often contribute as much to the theological heritage as do many portions of the New Testament.

But what of the second, the pragmatic-ethical view? This position looks to the present for the validation of theological ideas. Its chief concern is with human decision and action, and theological activity serves primarily to provide a rationale for these ethical concerns. It rightly understands that theology abstracted from the arena of history, of human activity, is essentially insignificant and that formal theological concepts must be made adequate to deal with the contingencies of present decision making and action. It does not tend, however, to view theology as a directive element in human activity, as an informer of human decision making and action. It tends rather to see the validation of theological models only in terms of the particularities of the immediate moment and so disregards the implicative nature of theology, its future orientation.

How, then, do these two views on model validation compare with the scientific approach? Stephen Toulmin has suggested that science must meet a threefold demand, that "its explanatory techniques must be not only in (Copernicus's words) 'consistent with the numerical record'; they must also be acceptable—for the time being, at any rate—as 'absolute' and 'pleasing to the mind.'"¹¹ The scientific approach involves not only attention to the past (the "numerical record") and a present judgment as to the appropriateness of the model (that it is "pleasant to the mind"), but also an anticipation of the future (as the model is taken to be absolute"). The experimental character of scientific modeling depends essentially upon this futural orientation. Experimentation is never a random activity. It is shaped and directed by some relatively "absolute" paradigm, by a particular gestalt, which anticipates the character of yet unexplored portions of the universe. It is in the experimental exploration of these areas that old paradigms are validated and eventually challenged and new paradigms emerge.

Further, it should be noted that experimentation in the sciences is

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never finally a private affair. Of course, although an individual researcher may work alone and perhaps even in secret, if his results are to become a part of the scientific corpus they must ultimately be brought into the public arena of scientific debate. The establishment of a new paradigm within the sciences requires that the scientific community affirm, accept, and adopt the new view of the world.¹²

This total relation to time with an experimental anticipation of the future and this necessity for community confirmation, I would suggest, offer the possibility for new methodological insight within the theological discipline. But, if this is so, what is the operational character of this theological method?

POSSIBILITY OF RESPONSIBLE AND EXPERIMENTAL THEOLOGY

It seems to me that this method might best be described in terms of "responsibility" as that concept has been developed by H. R. Niebuhr.¹³ Such a description would recognize four elements in responsible theology: that theology is done in response to the activity of the universe as seen by the theologian; that the theologian does not perceive this activity directly but has it mediated to him through some interpretive paradigm; that the theologian is accountable for his interpretation of the universe as well as the paradigms which underly that interpretation and so offers it concretely to the world with the expectation that the universe will confirm, object, or correct it; and, finally, that this process of interaction witnesses to theologies social context which is continuous in both time and space.

According to the first element of responsible theology, the theologian does not supply his own data. He does not have some private stock of revelation which is not available to any critical observer. The universe thrusts against him a "numerical record." This record includes the public data of the sciences and humanities as well as the personal data of individual human experience. Thus, a responsible theology of creation must respond not only to the best guesses of contemporary astronomers as to the origin of the universe and similar theories of biologists and sociologists as to the origins of species and societies, but also to the personal witness to the continual appearance of new opportunities and possibilities in our private lives. If the correlation of these data is to be responsive to its source, it can no more afford to be structured upon a seventeenth-century astronomy than it can afford to exclude from its focus personally apprehended creative moments.

And yet the theologian does not acquire these data immediately. Rather they are mediated to him through some particular in-

terpretive paradigm which attempts to integrate and synthesize all incoming data into a sensible rational structure. The paradigm includes all the primal assumptions which tell the theologian which bits of sensory experience are meaningful and which bits are unintelligible noise. Thus, classical Christian theology assumed that God, being absolute and perfect, was therefore unchanging. These divine attributes then acted as the fundamental shapers of Christian thought, Roman and Protestant, until the most recent years. And they are still the basic paradigm for popular Christianity.

In this regard we come to the third element of responsible theology; that theology is accountable to the universe for its confirmation. Since the beginnings of evolutionary theory in the mid-nineteenth century through the development of relativistic physics in the early years of this century, the universe has been witnessing to the essential presence of change, relationality, and interdependence within its life. In the fact of this witness, classical Christian theology must reexamine the constitutive assumptions of its most fundamental paradigm, that is, the nature of God, if it is to be truly responsible. In the light of what we know of that God's world, it is no longer satisfactory to conceive of the divine nature in terms of immutability alone. To affirm intelligibly that the divinity lives and that it loves and cares for its creation implies that the divine nature manifests a significant range of mutability.¹⁴

But what is involved in this accountability is not simply intellectual testing or theoretical evaluation. Every theory seeks not only to explain past activity but to provide a rationale for future activity as well. The theologian, if he is to be responsibly accountable, must seek to realize all the concrete implications of his personal and social life. He must be the living experiment of his theology. And what is true for the "child of God" is no less true for the "people of God." For Christian theology does not simply seek to explicate our individual existences, it also speaks to our corporate lives. Thus, the church becomes experimenter when it concretizes its own theological affirmations that the world may object, confirm, or correct them.

All three of the preceding elements of responsible theology imply the fourth: that theology is done within a continuing social context of both space and time. This means that the theologian can never be satisfied either with a perennial theology which ignores the theological significance of the unfolding (and often surprising) events of human history or with a provincial theology which defines its context in terms of narrow geographical, sociological, or psychological spaces. It is only as he recognizes that he labors in the midst of an

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ongoing history (which will make his theology obsolete) and a universal community (of which he can have only partial knowledge) that the theologian can be responsible in his work.

This, then, is the method which appears to allow one to be both theologian and twentieth-century man. It points to the vast field of the theological enterprise and its consequent incompleteness. It recognizes both that theology is objective in that it is done in response to an objective universe and that theology is subjective in that it is the synthesization of the perceptions of particular men.

There is in order here a final note. It must be conceded that one cannot finally affirm that the adoption of an experimental theological method, as outlined above, will eradicate the human pride and self-centeredness which intrude into all of man's striving. Certainly, the use of the experimental method in the sciences has not returned the practitioners of that discipline to Eden. Nevertheless, the adoption of such a method in the doing of theology does promise to make theologians, both professional and lay, more self-conscious about the personal and social implications of their theology as well as to incline them toward the world for their theological validation. These alone are consequences to be desired.

NOTES

1. P. H. McDonald, "Cybernetics and Theology," *A Guide to Dialogue between Science and Religion* (1967), p. 47. This paper is part of a collection of documents compiled by the Study-Research Group on Science and Theology at the conclusion of the Experimental Study of Religion and Society at North Carolina State University.

2. Michael Polanyi, *Science, Faith and Society* (Chicago: University of Chicago Press, 1964), p. 31.

3. Stephen Toulmin, *Foresight and Understanding* (New York: Harper & Row, 1961), p. 101.

4. Loren Eiseley, *The Firmament of Time* (New York: Atheneum Publishers, 1969), p. 11.

5. Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press), p. 122.

6. Toulmin, p. 115.

7. Robert N. Bellah, "Christianity and Symbolic Realism," *Journal for the Scientific Study of Religion* 9 (1970): 95.

8. Herbert Fingarette, *The Self in Transformation* (New York: Basic Books, 1963), p. 22.

9. Kuhn, pp. 117 ff.

10. Reinhold Niebuhr, *The Nature and Destiny of Man* (New York: Charles Scribner's Sons, 1964), p. 182.

11. Toulmin, p. 115.

12. Kuhn, pp. 143–58. This chapter articulates the process by which a new scientific paradigm comes to be accepted by the community of scientists.

13. H. Richard Niebuhr, *The Responsible Self* (New York: Harper & Row, 1963), pp. 61–65.

14. For a broader development of the conclusion see Charles Hartshorne's *The Logic of Perfection* (LaSalle, Ill.: Open Court Publishing Co., 1962); Schubert Ogden, *The Reality of God* (New York: Harper & Row, 1966).